

REMARKS/ARGUMENTS

The present invention teaches a method for improving the stability of the free layer through the introduction of a second pair of stabilizing layers, located either above or below the standard stabilizing layer and magnetizing it in a direction that is antiparallel to that of the first bias layer, thereby magnetostatically canceling out most of the external field of the first bias layer.

Reconsideration is requested of all rejections based on 35 U.S.C. 102 and 103:

In responding to examiner's ongoing arguments for rejection of our claims, we respectfully submit that examiner's assertion that we have misread the reference is unwarranted. We will demonstrate this by providing a more detailed explanation of why it is correct to maintain that Gill's permanent biasing magnet overlaps his free layer 68:

A close examination of Gill's Fig. 5 shows that permanent magnet layer 88 is in contact with seed layer 130. It is an integral part of Gill's invention that layer 130 must be FeCoCr, not just any seed layer. This is because, as examiner surely knows, FeCoCr is widely known to be a hard (i.e. permanent) magnet material. As a result, longitudinal bias is applied to free layer 68 **by layer 130** as well as by layer 88. From a magnetic standpoint, the free layer receives its bias, on each side, from a single structure in the shape of an inverted L.

It cannot be argued that the permanent magnet layer does not overlap the free layer simply because the part that overlaps the free layer comprises a different material from the part that abuts it.

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We further point out that the bias seen by Gill's free layer also derives from the synthetic antiferromagnetic structure that comprises his layers 134, 138, and 142. Although this structure is not a permanent magnet in the conventional sense it is functionally indistinguishable from one.

As a consequence of the above explanation it should now be evident that we have not misread the size of the gap.

Examiner's statement to the effect that "the features upon which applicant relies (i.e. the features recited above) are not recited in the rejected claims." is not understood. Lines 3-8 of claim 1, for example, read as follows:

"providing a pair of opposing permanent magnet layers separated by a first gap and magnetized in a first direction, that abut, and do not overlap, said free layer, thereby providing longitudinal bias thereto;

forming, at a distance above said permanent magnet layers, a pair of opposing additional bias layers that are separated by a second gap that is less than said first gap; and"


Thus, both differences vis a vis Gill do appear in our claims.

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Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

GEO. O. SAILE & ASSOCIATES
28 Davis Avenue
Poughkeepsie
NY 12603

By 

Stephen B. Ackerman
Reg. No. 37761